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ABSTRACT

A study was conducted to examine how the implementation of new technology in the newsroom has affected job satisfaction, whether demographic characteristics of employees have an effect, or whether employees in certain classifications of jobs are more satisfied with this technology than others. Pagination was chosen as the technology to study because it was the newest in a series of technological innovations that have found their way into newsrooms. The study focused on how pagination technology was introduced, the types of persons who used the technology, and how that is related to job satisfaction. One hundred fifty-nine respondents from 26 newspapers answered a mail survey questionnaire (a 52% response rate) which was designed to examine the concerns of the study. Results indicated that employee satisfaction was directly related to the degree of involvement the individual had in the planning/implementation stages. Four types of individuals were found to operate in the new tech newsroom: opportunist types, production types, time-conscious types, and Luddites (those who had many problems with the system). Pagination systems have given most newsroom personnel a sense of control over the news process and have changed both the physical layout of the newsroom and the mental preparation of the employees. Those currently working in newsrooms using pagination indicated a number of areas that deserve attention if the new technology is to be implemented to its fullest extent. Findings indicated that a training process should be developed to introduce personnel to the new technology and to monitor their progress with it. The implementation of new technology in the newsroom has expanded horizons, responsibilities, and the need to understand its long-term effects. (Fourteen tables of data are included and 73 references are attached.) (MG)

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Pagination and Job Satisfaction in American Newsrooms

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Introduction

Conrad C. Fink (1988), in his book Strategic Newspaper Management, pointed out that entire books could be written about production processes in newspapers and that "each technological breakthrough . . . warrants highly detailed treatment. . . . "

Technological change is rapid in the newspaper industry and the changes are raising many questions. One area that warrants highly detailed treatment is how the introduction of technology relates to job satisfaction among newsroom workers. There are questions about whether well developed training programs result in greater acceptance of and satisfaction with the technology or whether how the technology is introduced is the most important factor (Blackler and Brown, 1985).

However, there have not been a great number of job satisfaction studies in American newsrooms, and few of those that have been done have related specifically to technological changes (Beam, Dunwoody, and Kosicki, 1987, Barrett, 1984, and Shaver, 1978). As in other industry, study is needed in newsrooms because there is concern in all industries that rapid computerization might create problems such as increased centralization and control of workers by management, (Simon, 1979) or that there might be large numbers of workers laid off because their jobs are done by computers (Reinecke, 1984, and Logsdon, 1980).

Other concerns include the possibility that computerization might make some jobs more routine and boring, or make work more intense. Or, there might be less social contact among workers, (Boyle, Wheale, and Sturgess, 1984; Verdin and Pagano, 1986) or an increase in stress among workers (Brod, 1984, Harris, 1985).

Although the computerization of all areas of the newspaper industry, such as advertising, circulation, and the news process is, for all practical purposes complete, that does not mean that the problems caused by computer introduction have ended. New applications of computers in the newsroom mean continuing, rapid technological introduction. All of the speculation about technology and job satisfaction relates in one way or another to job satisfaction and computers, and is pertinent for the newspaper industry. One of the most recent and ongoing technological introductions in newspapers is the use of pagination systems in newsrooms. Little is known about the ultimate effects of pagination (Goltz, 1988).

This study is not concerned with all the effects of pagination but only with the job satisfaction of newsroom workers who use pagination systems. Of course, pagination could have profound effects in many other ways. Pagination was chosen as the technology to study because it was among the newest in a series of technological innovations that have found their way into newsrooms. It is hoped that the findings of this study can be applied to many types of technological introductions as they occur.

This study is designed to examine how the implementation of new technology in the newsroom has affected job satisfaction, whether demographic characteristics of employees have an effect, or whether employees in certain classifications of jobs are more satisfied with this new technology than others. The study will focus on how the technology was introduced, the types of persons who used the technology and how that is related to job satisfaction.

Research Questions

The following research questions were asked:

1) How involved were newsroom employees in the planning and implementation of pagination systems in the newsrooms?

2) How satisfied were newsroom employees with the new systems?

3) Will individuals who were allowed to participate in the planning and implementation of pagination systems show more satisfaction with the systems?

4) Did employees perceive that pagination systems changed the jobs performed in the newsroom or the perceived control over jobs?

5) Were there certain types of people who were more satisfied in newsrooms that had pagination systems?

6) Are their recommendations those using pagination systems would make for those considering adoption of new technologies?

Literature Review

Technology in the printing of information caused great social change throughout the ages (Febvre and Martin, 1984). Daniel Boorstin, in his book, The Discoverers, pointed out that, "Before the printed book, Memory ruled daily life. . . ." (Boorstin, 1985). The rise of the printing press brought profound change in many ways, including putting scribes out of work, because the new methods were faster and cheaper (Boorstin, 1985).

The invention of the rotary press and the industrial revolution of the nineteenth century were said by Oettinger (1984) to have had profound political effects in the United States and "transformed our notions of literacy." No doubt the changes also had great effects on newsroom workers.

The improvements that aided in the move toward the creation of a mass press in the 1830s in the United States were important and are well documented by such historians as Mott and the Emerys (Mott, 1964; Emery and Emery, 198).

However, when computers and film processing began to replace typewriters and hot metal composition it ushered in a new era for newspapers. Prior to the adoption of offset printing the production methods used by newspapers had been much the same for a number of years. Sohn, Ogan, and Polich, (1986) in their book on newsroom management, pointed out that newspapers remained relatively unchanged for about 100 years with "hot type" printing technology.

This is not to say that the industry was devoid of technological innovation, but the flood of technological change really began with the adoption of the offset printing presses and press service Teletypesetter services in the 1950s and 1960s.

The adoption of computerized systems, however, did not take place with rapidity until the early 1970s. For example, a 1969 research study by the American Newspaper Publishers Association showed no use of VDTs before 1969 but by the early part of the 1980s more than 46,000 VDT units were in use (Sohn, Ogan, and Polich, 1986).

An example of the rapid technological change in the newspaper industry is illustrated by a brief article in the Associated Press's AP World magazine. From 1974 to 1988 that service saw the implementation of LaserPhoto service, satellite delivery of news, electronic darkrooms and digitalization of pictures, and computer-driven digital systems for graphics and photos (AP World, 1988).

Such technological changes were occurring throughout the newspaper industry and were important because "new technology brings with it traumatic change that deeply affects

employees' lives" (Fink, 1988). Because computers have been used for years in newsrooms, there is a question about whether a technological change in computers will affect job satisfaction the same way that the change to computers might have affected job satisfaction. The question of job satisfaction is also important because previous study has shown that job satisfaction is a significant factor in explaining commitment to the organization (Becker, Sobowale, and Cobbey, 1979).

Thus, job satisfaction could be related to turnover and less turnover could mean more profit for news organizations because training costs might be less (Sohn and Chusmir, 1985).

Computerization also has made the news production process faster and has allowed for a more timely product. The emphasis on timeliness and speed of production was a major reason listed by three researchers for technological introduction (Sohn, Ogan, Polich, 1986). Pagination could speed the production process even more. However, the time savings in production processes could be somewhat offset by people's inability to read from a screen as fast as from "hard copy." A newspaper article reported that research at the University of Rhode Island showed that reading from a screen was 7 percent slower than reading from print. The researcher said this was a significant figure for "those who read large amounts of information" (St. Louis Post-Dispatch, 1985).

Copy editors would fall into the category of heavy readers and it could be that an expected time savings that did not work out as senior editors or publishers planned, or as copy editors expected, could result in less job satisfaction. It might be expected, however, that increased familiarity with reading from a screen and improvement in design of screens might result in faster reading skills. It might also be expected that as new generations of people who have grown up reading from a screen move into the newspaper industry that they might be more comfortable and be faster reading information on a screen.

Centralization v. Decentralization

Computers have already contributed to both increased centralization and to increased decentralization in news operations. Whether centralization or decentralization is the result of computerization could hinge on a decision by management about how to use computers. In an early work on the use of computers in society one scholar warned, "The relation of technology to liberty is both prosaic and profound. It is prosaic because it can be either a facilitator or a constraint, whichever government chooses. It is profound because . . . man is a creature capable both of compassion and of murder" (Bell, 1983). Management also must make choices about how to use new computer systems in newsrooms and those decisions also are important.

An early and important organizational study by Johnstone (1976) found that an increase in centralization in the newsroom caused dissatisfaction among reporters. Johnstone found that satisfaction with the job was related to autonomy to accomplish duties, feedback from superiors, organization size, and tasks performed. The relationship with autonomy could be because newsroom reporters and editors are trained to be independent thinkers and might therefore be unhappy about any change that restricted independence.

Johnstone commented at that time that he thought technological innovation might result in an increase of centralization and bureaucracy in organizations, which would mean, if his findings were correct, more dissatisfaction with jobs.

On the other hand, some studies of newspaperwomen found that one of the factors that accounted for higher job satisfaction was the ability to direct their own work (Barrett, 1984, and Merritt and Gross, 1978). Being able to direct one's own work and keeping a variety of tasks are important for acceptance of technology and reduction of uncertainty for workers (Brass, 1985).

Stephen Hess, in his book on The Washington Reporters, (1981) also found that those reporters desired autonomy. He found that the lack of autonomy "caused friction," and he

speculated that this might be one reason some very talented writers were no longer in newspaper work.

If computers are used in the newsroom to increase management control over reporters and subeditors, or if those groups perceive computers are being used in that way, it could result in greater dissatisfaction with the job and with the technology. There is some evidence that some newspaper managers, especially in advertising and circulation departments, see computer monitoring as valuable in both training and in measuring productivity of workers (Goltz, 1988). However, a 1982 survey of managers showed that they said they did not use the computer to more closely control the work of others and the managers did not think they were being more closely monitored, either (Sohn, Ogan, and Polich, 1986).

The Newspaper Guild has taken a position against computer monitoring, and a 1988 unscientific survey of newspapers found no evidence of computer monitoring in the newsrooms, although one program in Arizona had been used but was suspended (Presstime, July, 1988).

It is interesting to note, however, that the survey found the greatest use of computer monitoring in those organizations with more than 100,000 circulation, which might fit the large, bureaucratic model that Johnstone found least conducive to autonomy (Presstime, July 1988). One author, in a commentary on the state of the American press, wrote that the "heyday of autonomy," which reached its peak in the 1960s, for newspaper reporters is over (Boylan, 1982). Anecdotal evidence has shown that managers have used monitoring to check on work product and to see what reporters are keeping in their computer files (Cunningham, 1984). Top-level managers have been warned that too much use of the computer for internal reports could make middle-level managers and reporters perceive that their work is being too closely monitored (Sohn, Ogan, Polich, 1986).

Despite the possibility of increased centralization, there could instead be decentralization as the use of computers for telecommuting increases. There has been increased "stay-at-home" work in many industries (Arkansas Gazette, 1985). Telecommuting, however, is opposed by The Newspaper Guild (Presstime, August 1985) and by other labor unions who say they fear the home will become an "electronic sweatshop" (Arkansas Gazette, 1985).

Telecommuting is an option in many types of positions for newspapers, and it is probably a reality for some types of positions, such as sports reporters who travel with teams and file stories into a central computer, or for other types of reporting positions that lend themselves to being away from the office, such as regional bureaus for larger metropolitan newspapers. Newspapers already receive a variety of information via computers form sources outside the newsroom. Newspapers in Utah, Pennsylvania, Nevada, and New Jersey, among other states, receive obituaries from mortuaries via remote computer hookups (Publishers' Auxiliary, May 20, 1985).

There is no reason why much of the information that is published in newspapers could not be sent by others who seldom or never come to a central location (Sohn, Ogan, and Polich, 1986). Telecommuters might perceive that they have greater autonomy.

Of course, there also is the argument that the existing organizational structure will determine whether computer technology results in centralization or decentralization. One study showed that computers, in and of themselves, do not influence change in an organization but instead reinforce the existing environment (Robey, 1977).

Previous theory suggested that the existing centralization or decentralization in an organization was determined by whether the organization existed in a stable environment--in which chase there should be more centralization--or in a changing, dynamic environment--in which case there should be decentralization (Lawrence and Lorsch, 1967).

Newspapers have been described as mature, stable businesses but at the same time one might speculate that the industry is dynamic because of uncertainty about its future structure, regulation and competition (Compaine, 1984).

One author said that the design of computer systems in organizations supports existing managerial perceptions of employees and he said managers most often think workers are lazy and must be closely monitored and therefore a more centralized computer design will be mused (Reinecke, 1984).

Other authors also believe computers will bring more centralization but for other reasons. One article said the increased interaction between departments and users and the pressure to conform will bring centralization (Kling and Iacono, 1984).

Computers now link a variety of departments in newspapers and it generally is considered a value because of the ability to share information (Kruglinski, 1985).

Interestingly, one group of authors said the one reason more centralized computer systems have not been used more in newspapers is because traditionally the departments have existed apart and computers have been purchased on perceived departmental needs and not on the needs of total organization (Sohn, Ogan, and Polich, 1986).

Labor Decline

The introduction of "cold type" processes in the 1960s resulted in a decline in the number of workers in what then was a labor intensive industry. Fink (1988) points out that one study shows that by 1983 newspapers employed 52 percent fewer workers in the composing rooms than before the cold type era. U. S. Department of Labor figures show that during the 15 years from 1972 to 1987, the number of production workers in newspapers dropped 12,400 from a high of 184,900 (Goltz, 1988).

Fink (1988) said he believes that job displacement "will continue well into the 1990s, particularly with pagination." Job displacement might not occur in the newsrooms but the introduction of pagination is likely to cause other changes that could affect job satisfaction. Some do not think that pagination will bring about the reduction in personnel that offset printing and computers did (Goltz, 1988). But others believe that as pagination becomes more affordable and is used in more newspapers there will be a dramatic reduction in photoengravers (Goltz, 1988). Still others have said that if pagination gets wide use it will be because the systems will aid news departments and help in marketing the newspaper, and not because of potential production cost reduction (Radolf, 1984).

Automation generally has resulted in the loss of jobs, however, and pagination could similarly make some jobs unnecessary. In certain areas of radio and among some television employees, automation has resulted in job loss, (Guerra, 1980) while in the printing industry computerization has virtually eliminated Linotype operators (Smith, 1979).

One researcher said that technological change can result in fears of job change or job loss and this can increase anxiety. Therefore, he suggests establishing employee assistance plans before technological change and also suggests that technological introduction proceed slowly (Harris, 1985). One study of layoffs in the newspaper industry that have resulted from technological change shows that the industry has been exemplary in handling the process and that most layoffs have occurred from buyouts of contract or attrition (Dertouzos and Quinn, 1985).

Newspapers in Seattle and Houston are examples of those that have planned for training programs to retrain employees whose jobs are changed by pagination, or planned to use attrition or buyouts (Goltz, 1988).

Newspapers implementing pagination systems might actually increase the number of desk personnel because the work that is being done in the back shop might now be done by editors working on the desk (Sohn, Ogan, and Polich, 1986).

Pagination allows the editor to write copy, produce headlines and lay out an entire page on a single terminal screen. When the system is functioning as it should it will allow automatic platemaking from a computer and will result in the elimination of such processes as proofreading, photocomposition, page pasteup, cameraroom work, and platemaking (Fink, 1988). The technology taking the newspaper from a very labor intensive industry to a

more capital intensive industry. But these changes might have an impact on workers. One journalism professor wrote that pagination systems will result in great reorganization. He said the changes will mean "the separation between front and back shops will become less distinguishable" (Publishers' Auxiliary, Feb. 24, 1986). This should result in an increase in responsibility for the editors.

The increased control that editors should have with pagination could be a positive factor for job satisfaction. One study showed that computers were a source of satisfaction for workers because they perceived their jobs as being more interesting than before (Kling and Iacono, 1984). Of course, computers might also have increased the number or types of tasks that a worker must perform in a day.

Stress

One of the problems that might result from technological introduction is an increase in stress. Waldholz, (1983) in an article about stress and newspeople, said . . . "the dramatic changes in technology and economics . . . have heightened our profession's insecurity." Waldholz, a reporter for The Wall Street Journal, wrote that the newsroom had been found to be stressful simply by its nature. He said uncertainty contributes to stress. Technological change could add to that. One study found that the introduction of computers into the newsroom resulted in an increase in uncertainty in smaller organizations, but a decrease in uncertainty in larger organizations. The author said this could be because editors in larger organizations were more out of touch with the organization and computers allowed them to maintain closer control (Carter, 1984).

Stress might be caused by fear of obsolescence, or loss of control of the job, fear of unemployment or fear from possible health problems relating to the use of display terminals (Shipman, 1986). As already noted, the introduction of technology does not always mean that jobs will be eliminated but with pagination it does mean that jobs will be changed, often dramatically. In fact, technological introduction and the related job change might be perceived positively by workers. A study by Fowler (1985) shoed that the perception of greater control of work after the implementation of VDTs resulted in increased satisfaction. This illustrates that stress often is an individual, perceptual matter (Giles, 1983).

The change in work could either be increased intensity of work or perhaps increased boredom, depending upon the nature of the change and the position. Either could result in stress. Some electronic systems such as videotex have been reported to be boring for traditionally trained journalists because the work offered no challenge, the pay was low, advancement opportunity was perceived to be poor, and some journalists said they did not think they were performing "real" journalistic functions. Journalists said they did not get much feedback, (Bozanich, Eckstrom, Pinchas, and Savage, 1985) which was something Hess (1981) identified as a contributing factor to job satisfaction. The videotex journalists also said they did not like the anonymity and the lack of original reporting (Bozanich, Eckstrom, Pinchas, and Savage, 1985).

Of course, it is hard to tell whether any of these problems will be prevalent with pagination systems because copy editors, regardless of the technology used, have always worked in anonymity. But there is the possibility that the work might not be perceived to be as challenging and boredom can be stressful. One article suggested careful hiring of people for electronic publishing ventures--that is, those who could work in isolation and perform rote work (Renfroe and Criner, 1982). These might also be requirements for pagination system operators.

The systems could, however, create a greater sense of control over the product, which has been found to be a satisfier (Barrett, 1984, and Fowler, 1985).

Although perhaps only loosely related to stress, the matter of technological change and its relationship to promotion or advancement is nonetheless a real problem, some believe.

Studies show that the perception that chances for advancement are slim is a dissatisfier (Shaver, 1978). One study, reported in a newspaper article, showed that minorities left the newspaper industry because they believed there was little chance for advancement (USA Today, 1985). There have been numerous articles that said that one of the major effects of computerization was the decrease of middle-management positions. A reduction in advancement possibilities caused or perceived to be caused by pagination systems could result in dissatisfaction.

Computers and Health

Concern about video display terminal use and its relation to health have increased in recent years. A Suffolk County Legislature in New York became the first government body to pass a law regulating the working conditions of computer operators in the private workplace (Presstime, June 1988). A similar bill was introduced and passed by the Oregon State Legislature, but the bill was vetoed by the governor (Publishers' Auxiliary, Aug. 12, 1985).

Workers have complained about headaches, blurry vision and eyestrain after working at video display terminals and researchers have said that vision defects such as nearsightedness can cause such problems (Publishers' Auxiliary, Oct. 31, 1988).

However, others say that years of tests have resulted in no conclusive evidence that VDT use causes eye problems such as cataracts, glaucoma, or eyesight deterioration (Presstime, June 1988). Publishers have denied any such connection, (Stein and Hembree, 1984) and there is disagreement about the health risks among some experts (Sneed, 1985, and Slesin, 1984).

Individual Characteristics

Some studies have shown that various individual characteristics might be related to acceptance of technology. Degree of education, sex, age and time of employment with the company were identified as factors in one study (Rezinkoff, Holland, Strobel, 1976). Another study showed rigidity was associated with negative beliefs about new technology (Stone, Kemmerer, Guetal, 1984). Still another study showed people with high incomes tend to perceive computers more favorably (Lee, 1970). Another study showed that persons with an internal locus of control--that is, the feeling that one can control one's own outcomes--had a more positive attitude toward computers than persons with an external locus of control--those who believe some outside forces control their outcomes (Coovert and Goldstein, 1980).

A characteristic of reporters that has been identified is a high desire for participation in decision making (Joseph, 1982). Two researchers said that participation by both managers and users during the introduction stage of technological change is very important to lessen any resistance to the technology (Verdin and Pagano, 1986).

The trend toward a desire for participation is seen by some as part of a larger societal trend in which workers desire to have more say about decisions that might affect their work (McKendrick, 1982).

Research Procedure Implemented

A mail survey questionnaire was designed to examine employee/ management job satisfaction, employee interaction, involvement in the pagination implementation process, the possible change in job requirements/skills with the introduction of pagination systems, and demographic variables deemed necessary to identify possible types of individuals in the

new tech newsroom. It addressed perceived changes in newsroom tasks since the introduction of pagination as well as factors considered important by management in the implementation of pagination similar to those identified by Fowler with the introduction of VDTs into American newsrooms in 1984. Demographic and psychological variables were also gathered.

Newspapers using pagination systems were identified in several ways: (1) selected newspapers were identified by examining the equipment listings section for American daily newspapers published in Editor and Publisher International Yearbook (1987), (2) trade publications ("Presstime" and "Editor & Publisher") were examined to identify news organizations that had recently adopted pagination systems; and (3) interviews were conducted with production managers/managing editors at newspapers identified as using pagination to determine the number of questionnaires to send to each newspaper. These papers made up the universe of 41 papers identified as being regular users of pagination terminals in their newsrooms.

Prior to sending questionnaires, telephone calls were made to each paper to determine potential number of respondents (frequent pagination users), when the pagination system was installed, how many terminals were in their editorial area, and the number of people that used terminals on a regular basis. Contacts were first made with the managing editor of each paper to identify a contact person, i.e., the person most responsible for the day-to-day operation of the pagination system, and to obtain the basic information. We then asked the managing editor to transfer us to that individual to ask for his assistance, and to ensure that a sufficient number of questionnaires were sent to each paper so that persons "who regularly used pagination terminals" had access to questionnaires. By involving the managing editor in the process we felt it would increase the probability of participation and put some pressure on the "contact" to work with us because it had the implied support of the managing editor. This personalization was judged to have helped the response rate, which was 52%.

The pre-determined number of questionnaires were then sent to the contact person (with self-stamped, addressed return envelopes) for distribution to both management and newsroom employees. The contact had been told in the initial phone conversation that he would not be bothered with follow-up contacts or have to check on anyone. His job was simply "to ensure that those who used pagination terminals on a regular basis at his newspaper had the opportunity to participate." The final comment to contacts, other than checking their mailing address, was, "Now, if I may double-check ... you will need ___ questionnaires? Right?" The number in the blank was the number identified by questions asked of the managing editor.

Of 41 newspapers identified as probable users of pagination systems, initial calls to managing editors found 32 currently using pagination systems in their newsrooms. Thirty-one of these agreed initially to participate in the study. Two later returned questionnaires explaining that they either did not wish to participate in the study, or they had used pagination only experimentally and no longer used it. One paper that had initially agreed to participate did not return questionnaires. A news employee called to explain that the individual in charge of pagination had been hired by the pagination company servicing their newspaper and had destroyed the questionnaires before leaving as director of pagination position. Twenty-six newspapers participated in the study.

Where appropriate, frequency distribution, factor analysis, correlations and multiple regression were used in the analysis of data. The $p < .05$ alpha level was required for statistical significance in all situations.

Who Were The Respondents?

In all, 159 respondents (52%) returned questionnaires from the 26 sample newspapers.

Respondents were typically male (107 or 67.3%), had a college degree (136 or 85.4%), were between 22 and 63 years of age (avg. 36 years), and had worked in newspapers an average of 13.6 years (30% had 8 years or less). Approximately 60 percent of those with college degrees indicated journalism/communications as their major emphasis area.

The number of newsroom employees ranged from 2 to 800 with circulations from 10,000 to 600,000.

Newspapers were found to use one of five pagination systems. A large majority of papers (18 for 69%) used the Hastech, five (19%) used Triple I (International Information, Inc.), and one each were found to use either the Harris, the Atex or Autologic pagination systems. All newspapers had installed pagination terminals since 1981 and had an average of 6.7 terminals.

Only one-third (52 for 32.7%) of employees said their paper had a formal training program for pagination users. Almost half (66 or 43%) said there had been an increase in the number of newsroom personnel since the introduction of pagination with 62 (41%) saying it had caused an increase in departmental interaction. For the most part, managing editors, publishers and production managers were those listed as the ones who had determined how pagination systems were to be implemented (see Table 1). As one respondent said, "We need more feedback from front-line people to management before the system is purchased. They buy it; we live with it and use it." Participants generally shared a pagination terminal (127 or 82.2%) and spent approximately 4.5 hours per day at the terminal.

Findings

Research Question One asked how involved individuals had been in the planning and implementation of pagination terminals at their respective newspapers.

Only 35.6% of the respondents strongly agreed or agreed with the statement that they had been involved in decisions about the pagination system right from the start (see Table 2). Just over 34% strongly agreed/agreed with the statements that management proceeded slowly and thoughtfully during installation and the decision to implement a pagination system was well planned with 32% strongly agreeing that everyone was adequately trained before the system was put into operation. Just 21 (14%) strongly agreed/agreed they were involved in decisions about pagination systems right from the start.

As mentioned earlier, the managing editor was listed most often (72%) by respondents by title as the individual who determined how the pagination system would be used and implemented in the particular newsroom. Publishers were listed by 62% followed by production managers (55%) and news editors (41%).

Forty-five individuals indicated that they had been a part of the group that determined how the system would be used. When asked to rank factors considered by the group as being "most important", "somewhat important", "considered but not at all important", or "not considered", the following factors were noted (see Table 3). Factors considered most important were if the system would speed up production (78%), how the system would affect deadlines (67%), which particular pagination system to select (55%), and employee training problems (49%). Neither the time necessary before putting the system on line or which area to introduce the pagination system into first were seen as being important considerations.

As for management style during the implementation, a significant number of respondents who said they knew how management decisions were reached concerning pagination systems

said they did not perceive a participative management style (see Table 4) as measured by a Tannenbaum/Schmidt leadership-style continuum ($X^2 = 35.05$, df = 2, $p < .001$). An additional 19.4 percent said that "management made the decision but took the time to sell it to employees." These were the two least participative management styles listed on the continuum.

The continuum went from most participatory style ("management appointed a committee to make the decision about the pagination system and agreed to abide by the committee's decision") to least participatory style ("management made the decision and announced it").

Research Question Two asked how satisfied individuals were with the pagination systems .

For the most part respondents seemed quite satisfied with the change to pagination systems (see Table 5).

More than half the respondents said they were able to keep busy all the time, that they had the freedom to use their own judgment and to do something that makes use of their abilities, and they they had a feeling of accomplishment from their job. They indicated satisfaction with the general working conditions and with the competence of their supervisors to do the job. Only 23.5% were satisfied with the way organizational policies were put into practice, however.

As for working conditions and job control, respondents did agree that they were responsible for more of the finished product but that it took more skill to do their job now than before pagination. A majority agreed (62.5%) that the design of the newspaper was better and it gave them a flexibility to handle late-breaking stories.

More than half (52%) said their job was more stressful with varying degrees of agreement as to morale, overtime and understanding job responsibilities with the introduction of new technology in the newsroom.

A significant number indicated they did not get more feedback from management since pagination's introduction, felt more tension now than before, had a generally busier day, but disagreed that they became obsolete the day the pagination system was installed.

Research Question Three examined the relationship between participation in the planning process and satisfaction with their job.

A major finding of the study was that participation during the planning and implementation stages resulted in greater satisfaction with the system but few individuals were involved in the planning process. This parallels the findings of Cheney and Dickson (1984), who reasoned that the method of introduction of technology is a critical factor in employee job satisfaction, and the findings of Blackler and Brown (1985), who said that participation by employees in planning for the introduction of new technology is important to acceptance by the workers and that management rarely included workers in the process.

As participation in decision-making increased, satisfaction with the way the systems were implemented increased; as did freedom on the job and control of work. This seems to support Joseph's finding that reporters desire a great deal of participation in decision making (1982). For example, employees who had a high level of participation were more likely to say management had proceeded slowly and thoroughly during the implementation of the systems and were more likely to say the decision to implement was well planned. On the other hand, about 35 percent and 34 percent, respectively, of all the respondents agreed with the two statements.

The pace and nature of the work, as a perceived by the employees also seemed to be influenced by whether they were initially allowed to participate. Those with high levels of participation were more likely to say they now have more time to do what is expected of them ($r = .2581$, $df = 143$, $p = .001$) and that the number of hours they have to do the job is more reasonable ($r = .1919$, $df = 143$, $p = .011$). They were less likely to think they have more to do now than before pagination was installed ($r = -.1379$, $df = 142$, $p = .050$). In contrast, respondents as a whole had greatly different views on the questions. Seventy-eight percent said they now have more to do, 14 percent said they have more time to do their work, and only 12.5 percent agreed that the number of hours they have to do their jobs is reasonable (see Table 4).

Degree of involvement in the pagination decision also gave editors a sense of control over the newsroom. The greater the involvement, the more they felt responsible for the finished page ($r = .1359$, $df = 144$, $p = .050$) and the more they agreed that they could see the end product ($r = .2075$, $df = 144$, $p = .006$).

As for stress, fifty-two percent said their jobs were more stressful since pagination was installed, but employees who had higher levels of participation were less likely to perceive their jobs as more stressful ($r = .2093$, $df = 144$, $p = .006$). Those who were more participatory were also less likely to perceive themselves as being more nervous and jumpy now than before pagination ($r = .1398$, $df = 144$, $p = .047$). Some 28 percent of all respondents said they now were more nervous after the introduction than before. Those involved in the decision were more clear about the amount of work they had to do ($r = .2235$, $df = 144$, $p = .004$) and how to do their job ($r = .2006$, $df = 144$, $p = .008$). They also disagreed that their skills were not higher than they needed to be ($r = .1709$, $df = 141$, $p = .021$).

As for involvement in the planning/implementation process, those who had been more involved were more satisfied with the chance to work alone ($r = .1332$, $df = 146$, $p = .050$), the chance to do different things ($r = .3213$, $df = 146$, $p = .000$), the chance to use their own judgment ($r = .2006$, $df = 145$, $p = .008$), the chance to try their own method of doing things ($r = .1403$, $df = 145$, $p = .046$), general satisfaction with working conditions ($r = .1352$, $df = 147$, $p = .050$), the way their supervisors handled the job ($r = .1590$, $df = 146$, $p = .028$), and the feeling of accomplishment they get for doing a good job ($r = .1570$, $df = 147$, $p = .029$).

Also related to satisfaction were the hours per day spent on the terminals. As the number of hours spent on the terminals per day increased, respondents were more likely to be less satisfied with their prestige in the community ($r = .2124$, $df = 145$, $p = .005$), less satisfied with their chance to do things for other people ($r = .1458$, $df = 147$, $p = .037$), and were more likely to think they became obsolete the day pagination was installed ($r = .1435$, $df = 140$, $p = .045$). Number of hours per day on the terminal also was related to reports of being more chained to the desk now than before pagination ($r = .1717$, $df = 140$, $p = .021$) and to reports of increased overtime ($r = .1677$, $df = 138$, $p = .025$). Similar concerns have been expressed by copy editors working with VDT systems or videotex systems (Fowler). The respondents also reported increases in tension and less time to talk with reporters about stories and to check the facts and details of stories. They also were less likely to agree that deadlines had been pushed back closer to press time since the installation of pagination.

Perhaps more importantly, the numbers of hours on the terminal related to feelings of involvement in initial decisions about implementation of the system. Employees who spent more time on pagination terminals were more likely to say they were less involved in decisions.

Years of experience and age of respondents were similarly related to perceptions of increased amounts of time it took to perform certain editing functions. Those respondents with more years of experience and those who were older were more likely than the sample as a whole to say it now took more time to check facts about stories ($r = .1586$, $df = 145$, $p = .029$), to lay out pages ($r = .1560$, $df = 146$, $p = .030$) or to talk with reporters about

stories and sources of information (r = .1927, df = 145, p = .010). Older employees and those with more years of experience were more likely to be satisfied with how policies were put into effect (r = .1735, df = 151, p = .017) and with work conditions (r = .1392, df = 151, p = .040); possibly because they were more apt to be consulted as senior members in the newsroom. As a whole however, only 23 percent of all respondents indicated satisfaction with the way organizational policies were put into effect and 56 percent said they were satisfied with the general working conditions.

Other findings indicate that respondents generally think that training programs were inadequate prior to the system being put on line. About 48 percent of the respondents did not think training was adequate. One respondent said, "Inadequate training results in wasted time because of trial and error, or completing a task the hard way because you weren't thoroughly trained." Another respondent said management expectations were overrated and page designers had low morale since pagination was installed. The respondent's suggestion?: "Allow ample training time -- then double it!"

Nearly 47 percent of the respondents said they believed there may be more health-related problems associated with the electronic editing systems. Some specific complaints included poor or inadequate lighting and design of chairs/desks used with pagination terminals. Another ergonomic point raised by at least one respondent was that terminals need to be spaced an adequate distance apart so that operators can work comfortably. Stress certainly fall into this area. As noted earlier, however, the more involved the individuals had been in the implementation procedure the less stressful they saw the situation as being.

Research Question Four asked if the implementation of pagination had changed newsroom tasks and perceived job control.

The amount of time spent on some basic functions was seen to have increased with the implementation of pagination systems (see Table 7). Fifty-seven respondents (39.3%) said it took more time now to lay out pages and 61 (46%) said they spent more time in the office now than before. Correlating degree of involvement in the planning/ implementation process and position in the managerial hierarchy seemed to have some effect on response. The more involved employees had been in the process the less time they said it took to lay out pages (r = .1512, df = 144, p = .035) and the less time it took to copyedit stories (r = .2468, df = 143, p = .001). One respondent said, "It (the system) was implemented without an increase in personnel, meaning extensive overtime work for some people. Also, there is 50 percent less time for copy editing." Another suggested that when pagination is installed the company should, "Either hire copy editors to replace fired paste-up people or train paste-up to paginate things like stock pages, weather, etc. The work load shifts up." An informal study by an Arkansas State University graduate student two years ago showed that some managing editors who had newsrooms where pagination systems were installed came to the same conclusion, and said that additional copy editors would be needed (Fears, 1985).

The difference in perceptions between management and workers about the timesaving qualities of the systems is telling. Management seems to have a different perception, generally believing that the systems do save time. When hierarchy level (reporters, editors, managing editors, etc.) was correlated with various statements it showed that management perceives that it now takes employees less time to write heads (r = .1927, df = 151, p = .009), less time to copy edit stories (r = .1764, df = 145, p = .016), less time to talk with reporters about stories (r = .1407, df =145, p =.046), and less time to check details of news stories (r = .1805, df = 145, p = .013) than did those lower in the hierarchy.

However, not all the response was negative. About 75 percent of the respondents said they now could see more of the end result of the products and similar percentages also said

that pagination had improved the design of the newspaper and had made it easier to handle late-breaking news stories. One respondent commented, "I am pagination's greatest fan. The best thing about it is it gives the editor control over the page. The only limitation is the editor's skill."

Perhaps one of the most introspective comments was: "Treat the introduction of pagination as every bit as revolutionary as the introduction of VDTs. This technology has ramifications that are every bit as extensive as the conversion of hot type to cold type. It's sexy, but it's dangerous."

There also was a difference in perception about planning for pagination.

The more likely one was to be in management the more likely one would agree that the decision to implement pagination was well planned ($r = .2162$, $df = 143$, $p = .005$), that they now have more periods in the day when there is little work to do ($r = .1562$, $df = 146$, $p = .030$), that the number of hours in a day they have to do their job is more reasonable ($r = .1612$, $df = 145$, $p = .026$), that the design of the newspaper is better since pagination ($r = .2207$, $df = 146$, $p = .004$), that they have more freedom to do their job now since pagination ($r = .1878$, $df = 145$, $p = .012$), that they feel more responsible for the whole product now ($r = .1393$, $df = 144$, $p = .048$), that they are more certain about what they are doing on the job now ($r = .2217$, $df = 144$, $p = .004$), that communication now flows more from the top down than before ($r = .1641$, $df = 145$, $p = .024$), and that they have a greater chance for advancement since pagination ($r = .1541$, $df = 144$, $p = .033$).

Management also tended to disagree that they had more to do now than before pagination ($r = -.2016$, $df = 148$, $p = .008$), that their job is more boring now ($r = -.1683$, $df = 144$, $p = .008$), that pagination would result in their job being phased out ($r = -.1548$, $df = 146$, $p = .026$), and that morale is not lower now ($r = -.1311$, $df = 145$, $p = .050$).

Research Question Five asked if there were types of individuals in American newsrooms who were more comfortable or satisfied in the new tech newsroom.

To determine whether different types of individuals were operating in the newsroom, the Likert statements were factor analyzed using an equimax factor rotation. Four types of individuals were identified: Luddites, Productives, Time-Conscious and Opportunists.

The first type of workers, called Luddites, typically consists of those who have many problems with the pagination system (see Table 8). They typically view their working conditions as stressful and see themselves victimized by the pagination system. The Luddites seemed particularly concerned about the health implications of their systems. They are concerned about the effect the system had on their general health and also about the increase in stress and nervousness brought on by the equipment. This could be a major problem within such a group because stress is a matter of personal perception.

Several of the responses that loaded highly for the Luddites could be tied directly to the increased perceptions of stress. For example, the Luddites said they were more chained to the desk, felt more isolated in the job and worked more overtime. Boredom and isolation in the job have been shown to be stresses for some workers who work with computers/new technology. Thus, this type, who are highly resistant to new technology, seem to show resistance because of health-related concerns.

Health is not, however, the only reason the Luddites perceived the systems negatively. But, those questions that loaded highest were related to stress and those questions that loaded next highest have in the past been shown to be stress related.

Other concerns the Luddites had were related to the impact of the equipment on older workers. They saw the equipment leading to more forced retirement for workers and they said older reporters and editors have more problems operating the equipment.

This finding seems to indicate that managers might pay more attention to alleviating the fears of health-related problems associated with the equipment, if they want to increase acceptance among this type of employee.

Perhaps additional information during the implementation stage would reduce fears among the Luddites.

The second type of workers could be classified as the Productive Workers. This type person is pleased with the pagination equipment mainly because of what the equipment can do from a production standpoint. This type saw their jobs as more interesting and they feel more in control of the product (see Table 9). The high loading on several questions seem to reinforce a theory of job enrichment related to satisfaction. In 1975, four researchers (Hackman, Oldham, Janson and Purdy, 1975) theorized that people would be more satisfied with their work if their skills were challenged; if they could see more of the completion of the whole product; if the job provided more autonomy for the workers; if they could see the work had an impact on the lives of other persons; and if there was knowledge of results. This type of worker seems to meet those qualifications.

The Productive Worker types see their jobs as more interesting, say they feel more responsibility for the complete product and can see more of the end result of the work than other types. They also say they can control more of the pace of their work. Thus, this type of worker perceived the pagination equipment as having an impact in several of the areas identified by Hackman, et. al., namely the challenge to skills, the completion of the whole product, an increase in independence, and knowledge of the results. The other portion of the theory, knowledge of impact on the lives of other people, might almost be a given with newspaper workers because many people are of the opinion that the mass media have a substantial impact on others (Brod, 1984; Veninga and Spradley, 1981).

There are some substantial differences between the Productive Workers and the Luddites. The Productive Workers were found to not share terminals with others, as the Luddites were likely to do. However, the Productive Workers generally do spend more time on terminal than do the Luddites. Perhaps most important, the Productive Workers perceived themselves as being involved in the planning and implementation of the pagination equipment, while the Luddites said they generally were not involved. Productive Workers were more likely to be young, while Luddites were older and had more years in the news business. Productive Workers also were typically male, and worked for a paper that had a formal training program.

The third type of individual was classified as the Time Conscious Workers (see Table 10). They have generally favorable attitudes toward the pagination process and that seems mainly because of the time-saving qualities of the equipment. This type of worker says there is more time to do the job and the number of hours to do the job is more reasonable now than before pagination. Thus, this worker was not likely to feel the stress from time pressures as were other types. The workers in this type also say, however, that they have more periods during the day in which there is little to do and that there is less to do now than before pagination was installed. Management should pay attention to that trait because it could indicate boredom or at least lead to boredom. This type of worker generally was pleased with management and says that workers did participate in the decision to implement a pagination system. This type worked in a newsroom that typically had more terminals than average but time conscious types more than likely shared a terminal, worked on a small circulation newspaper and worked in the newsroom rather than in management. This type also said the equipment has enabled the deadlines in the newsroom to be pushed back closer to press time and that the quality of the editing in the newspaper has improved.

The final type of worker can be called the Opportunists (see Table 11). This type said that pagination had created new, more specialized jobs in the newsroom and said that the chances for advancement in
the newsroom are now greater than before pagination was installed. This type was extremely pleased with the installation of pagination and that seemed true because of the opportunities the pagination equipment opened. The Opportunist indicated a desire to be

promoted in the organization and also indicated a feeling of more control over others. The Opportunists said they were involved in the pagination decision, typically were young and tended to have their own pagination terminal.

When one tried to predict the four newsroom types by demographic variables (see Table 12), few variables were found that independently added significance to the regression equation. In most instances the total equation did not explain more than 20 percent of the total variance while the individual contribution of a single variable accounted for four to 16 percent of the variance.

For Luddites, it is interesting that number of hours per day they use the terminal, circulation of newspaper and age were not important factors but their position in management was. This variable accounted for about five percent of variance.

For Production types, all factors were entered into the equation except years of experience in the newspaper field. The strongest factor was an individual's involvement in the planning process which accounted for 14 percent of variance.

For the Time Conscious types, planning involvement was also the most important variable; accounting for just over 16 percent of variance. All 13 variables were entered mathematically into the regression for this type.

For the Opportunists, their involvement in the planning/implementation was the most important factor while the number of pagination terminals in the newsroom was not important. In this instance, involvement accounted for 12 percent of the variance.

Research Question Six asked if there were concerns/recommendations that should be considered by those wishing to adopt pagination systems in their newsrooms.

Those currently using pagination systems identified several areas of concern and advice for those considering adoption of the new technology (see Tables 13 and 14).

As for problems mentioned, the most frequently mentioned was flaws with the particular system (20.2%), computer crashes (18.6%), and hardware software inadequacies (12.4%).

As for advice, comments generally fall into the category of developing a training program to acquaint employees with how their jobs will change, providing practice time before total introduction, and insuring there is a single individual in charge of the system or a centralized office where one can go to get assistance as problems occur. As might be expected, they also encouraged those considering a system to talk not only with managers at other papers that are using pagination but with the users as well.

Conclusions

Although many of the findings cannot be considered "causal" in nature becaause of the use of correlations, their implications must not be overlooked. Further examination is warranted to test these associations. Regardless, the following observations can be made.

1. Employee satisfaction with the pagination system was directly related to the degree of involvement the individual had in the planning/ implementation stages. As involvement increased, the more receptive and the more satisfied the individual was with the job.

2. Four types of individuals were found to operate in the new tech newsroom-- **opportunists types** who were generally satisfied with the pagination system; **production types** who enjoyed the challenge of working with technology; the **time-conscious** types who saw pagination as a means of regulating and regimenting their jobs; and **Luddites** who saw pagination as a threat to job security and to their health.

Although one would hope that ways could be found to make all employees accept the inevitability of the new technology, it seems as though there is and probably always will be some employees who will not accept change no matter what the advantages or benefits may be. This study indicates these types seem to be the older, traditional newsmen who do not want to accept change--those who still crave the Royal, manual typewriter days. Whether ways can be found to ease transition of new tech or whether this group will simply cease to exist
through attrition is unknown. Regardless, they seem to be present in many newsrooms.

One consideration would be to involve these workers in the implementation process initially--involving them in more than just pagination training programs. Past research has indicated that those who are more involved are also those who feel less threatened, are more likely to see the advantage of control over the job and accept the responsibility the new technology brings (Shipman 1986).

3. It appears that the introduction of pagination systems has given most newsroom personnel a sense of control over the news process and might also have positively developed their self-esteem. It seem advisable to involve personnel in the introduction/implementation phase because it lessens their fear of machinery, of the time it takes to do the job and their health-related fears.

4. It seems apparent that the introduction has changed the newsroom--both in physical layout and in the mental preparation of employees. The newsperson of tomorrow will no longer have a slot to which he feeds material. Tomorrow's newsroom will be composed of individuals who have a significant responsibility of determining not only the types of material that the public will learn about but how that material will appear in the final editions. No longer will others tell them how their stories should look nor tamper with them once they leave the newsroom -- pagination terminals give the journalist the power to construct and control. But with this new-found increase in control comes the responsibility that some may not be able to shoulder.

5. Those currently working in paginated newsrooms indicate a number of areas that deserve attention if the new technology is to be implemented to its fullest extent: training programs, increasing the size of the news staff, system sophistication, and addressing health concerns.

Although only a small percentage of variance is accounted for in the data by demographic variables thus far, such examination does highlight a number of relationships that deserve attention (training systems, reporting hierarchy, share terminals, sex, education, number of hours used per day, etc.) and relationships that might change when the newsperson of tomorrow who has grown up around a terminal moves into the newsroom. It would be wise to examine these variables and to study suggestions made by those working with the systems before introducing pagination into the newsroom.

6. Most certainly, the findings indicate that a training process should be developed to introduce personnel to the new technology and to monitor their progress with it. To be effective, it should become a natural component of the newsroom. Management should involve reporters in this process because this study indicates that a single participative function in a non-participative process will not result in satisfaction with the equipment. For example, good training programs made little difference if participating in planning and implementing was non-existent.

The implementation of new technology in the newsroom has certainly expanded our horizons, our responsibilities and our need to understand its long-term effects.

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Table 1

Individuals Mentioned by Title Who Determined How the Pagination System Would Be Used and Implemented in the Newsroom By Number and Percentage*

Title	Responsibility	
	Number	Percentage
Managing Editor	95	72.5%
Publisher	82	62.6%
Production Manager	72	55%
News Editor	53	40.5%
Executive Editor	45	34.3%
Editor	36	27.5%
Features Editor	30	22.9%
Copy Editor	23	17.6%
City Editor	17	13%
Sports Editor	15	11.5%

* N = 131

Table 2

Agreement With Selected Statements Concerning Worker Involvement in the Implementation of Pagination System By Number and Percentage

Statements	Strongly Agree or Agree	Neutral	Strongly Disagree or Disagree
Suggestions by employees about system were taken seriously by management.	53 (35.6%)	39 (26.2%)	57 (38.3%)
Management proceeded slowly and thoughtfully during installation.	52 (34.9%)	48 (32.2%)	49 (32.8%)
The decision to implement a pagination system was well planned.	51 (34.3%)	44 (29.5%)	54 (36.3%)
Everyone was adequately trained before system was put into operation.	49 (32.5%)	29 (19.2%)	73 (48.4%)
I was involved in decisions about pagination system right from the start.	21 (14.1%)	27 (18.1%)	101 (67.8%)

Table 3

Relative Importance of Factors Considered by Those Designing Pagination System

Factor	Most Important	Somewhat Important	Considered But Not Impt	Not Considered
How system would save money	14 (36%)	16 (41%)	7 (18%)	2 (5%)
How or whether system would reduce personnel	10 (26%)	13 (34%)	11 (29%)	4 (11%)
Employee reactions to page system	16 (37%)	15 (35%)	9 (21%)	3 (7%)
Employee training problems	22 (49%)	14 (31%)	6 (13%)	3 (7%)
If system would speed-up production	35 (78%)	7 (15%)	3 (7%)	0
If system would increase accuracy	24 (53%)	13 (29%)	3 (7%)	5 (11%)
How the system would affect deadlines	29 (67%)	9 (21%)	2 (5%)	3 (7%)
Which particular page system to select	22 (55%)	9 (23%)	7 (17%)	2 (5%)
Time necessary before putting system on line	7 (19%)	16 (43%)	11 (30%)	3 (8%)
Section or with which area to first introduce page system	10 (23%)	21 (47%)	10 (23%)	3 (7%)

NOTE: Figures do not equal N = 45 in all cases as some individuals left certain response options blank.

Table 4

Responses to Statements Which Describe the Way the Decision-Making Process of Choosing and Installing a Pagination System in Respective Newspapers Was Made by Number and Percentage*

Number/Percent	Respective Statement Options
65 (60.2%)	Management made the decision and announced it.
21 (19.4%)	Management made the decision but took the time to sell it to the employees.
3 (2.8%)	Management presented the idea to the employees and invited questions about it.
5 (4.6%)	Management presented a tentative decision to adopt the system, but that decision was subject to change.
3 (2.8%)	Management presented employees with the problem, asked for suggestions, but management still made the decision.
6 (5.6%)	Management asked a committee to make the decision about the system, but management defined the limits which the decision could be made.
5 (4.6%)	Management appointed a committee to make the decision about the pagination system adoption and agreed to abide by the committee's decision.

NOTE: Numbers do not necessarily total N = 159 as 40 individuals responded that they did not know how the decision was reached and 11 did not respond to the question.

Table 5

Response to Selected Statements Indicating Degree of Satisfactions With Current Job by Number and Percentage*

Statements	Satisfied/ Very Satis.	Neutral	Dissatisfied/ Very Dissatis.
Being able to keep busy all the time.	129 (82.2%)	18 (11.5%)	10 (6.3%)
Way job provides for steady employment.	126 (80.3%)	27 (17.2%)	4 (2.6%)
The chance to do different things from time to time.	118 (75.2%)	16 (10.2%)	23 (14.6%)
The chance to do something that makes use of my abilities.	118 (75.2%)	17 (10.8%)	22 (14%)
The freedom to use own judgement.	114 (73%)	20 (12.8%)	22 (14.1%)
The way my coworkers get along with one another.	114 (72.6%)	19 (11.9%)	24 (15.2%)
The chance to try my own methods of doing the job.	108 (69.2%)	18 (11.5%)	30 (19.2%)
Feeling of accomplishment get from job.	107 (67.8%)	25 (15.8%)	25 (15.9%)
The chance to work alone on the job.	106 (67.5%)	43 (27.4%)	8 (5.1%)
The competence of my supervisor in making decisions.	92 (58.9%)	33 (21.2%)	31 (19.9%)
Being able to do things that don't go against my conscience.	91 (59.9%)	40 (26.3%)	21 (13.8%)
The general working conditions.	88 (55.7%)	28 (17.7%)	42 (26.6%)
Chance to do things for other people.	84 (53.9%)	60 (38.5%)	12 (7.7%)
Pay and the amount of work I do.	84 (53.5%)	16 (10.2%)	57 (36.3%)
The way my supervisor handles people.	81 (51.6%)	33 (21%)	43 (27.4%)
Feedback I get for doing effective job.	70 (44.5%)	29 (18.5%)	58 (36.9%)
Chances for advancement in company.	64 (41%)	46 (29.5%)	46 (29.5%)
Chance to have prestige in community.	58 (47.2%)	70 (44.9%)	28 (17.9%)
The way organizational policies are put into practice.	37 (23.5%)	54 (34.2%)	67 (42.4%)

N's do not necessarily total N = 159 as some individuals did not respond to all questions.

Table 6

Agreement With Selected Statements Concerning Working Conditions, Job Skills, and Productivity After the Introduction of Pagination System by Number and Percentage

	Strongly Agree or Agree	Neutral	Strongly Disagree or Disagree
-- for each statement listed below individuals were asked to indicate current level of agreement as compared to the time prior to the installation of the pagination system ...			
I am now responsible for more of the finished product ...	134 (88.1%)	8 (5.3%)	10 (6.6%)
I now feel more responsible for complete product.	126 (84%)	12 (8%)	12 (8%)
It takes more skill to do my job now than before.	119 (78.3%)	19 (12.5%)	14 (9.3%)
I have more to do now than I did before pagination system.	117 (78%)	17 (11.3%)	16 (10.7%)
I now can see more of the end result of my work.	115 (75.7%)	23 (15.1%)	14 (9.2%)
Pagination has caused me to need to update job skills to adequately perform my job.	108 (71%)	17 (11.2%)	27 (17.8%)
I would like to be promoted to higher level in organization.	104 (69.4%)	25 (16.7%)	21 (14%)
The design of our newspaper is better since pagination.	95 (62.5%)	26 (17.1%)	31 (20.4%)
We can now more easily handle late-breaking stories.	94 (61.4%)	30 (19.6%)	29 (18.9%)
Our news flow patterns changed	91 (59.5%)	32 (20.9%)	30 (19.6%)
My job is more interesting now.	86 (57%)	35 (23.2%)	30 (19.9%)
Older reporters/editors have more problems operating system.	85 (55.5%)	24 (15.7%)	44 (28.7%)
Seems that authority and responsibility has spread to more people since pagination.	82 (54.3%)	25 (16.6%)	44 (29.1%)
Job is more stressful now.	79 (52%)	29 (19.1%)	44 (28.9%)
I now feel more chained to desk than before pagination.	73 (48%)	30 (19.7%)	49 (32.2%)
I think there may be more health related problems assoc. with electronic editing system.	71 (46.4%)	45 (29.4%)	37 (24.2%)
I have more freedom to do my job with pagination now.	68 (45%)	32 (21.2%)	51 (33.8%)
I now am more able to control pace of my work.	63 (41.1%)	31 (20.4%)	58 (38.2%)
Pagination has caused creation of new jobs in the newsroom.	56 (37.6%)	32 (21.5%)	61 (40.9%)
I have more control over others now than before.	55 (36.4%)	43 (28.5%)	53 (35.1%)
My workload now varies more from day to day.	52 (33.2%)	37 (24.3%)	63 (41.5%)
My background, skills, ability and temperament provide good "fit" with present job, more than before pagination.	52 (34.2%)	55 (36.2%)	45 (29.6%)
I now feel more isolated in my job than before.	49 (32.6%)	30 (20%)	71 (47.3%)
Morale is lower now that we have gone to pagination.	49 (32.4%)	44 (29.1%)	58 (38.4%)
We have pushed our deadlines back closer to press time now.	48 (31.6%)	32 (21.1%)	72 (47.3%)
I now am more certain about what I am doing on the job than before.	46 (30.7%)	63 (42%)	41 (27.3%)
Skills in my present job are higher than necessary to be a high performer.	45 (30.2%)	71 (47.7%)	33 (22.2%)
Pagination has resulted in me working more overtime.	43 (28.7%)	40 (26.7%)	77 (44.7%)
Pagination system has made me more jumpy & nervous.	42 (27.6%)	37 (24.3%)	73 (48%)
I am more clear about how to go about performing job duties/responsibilities.	39 (25.6%)	73 (48%)	40 (26.4%)
We have saved a lot of money because of pagination system.	38 (25.7%)	83 (56.1%)	27 (18.2%)
Quality of editing is better since pagination.	37 (24.5%)	36 (23.8%)	78 (51.6%)
Management has more control now over newsroom and pagination is largely responsible.	37 (23.3%)	49 (32.2%)	68 (43.5%)

Table 7

Perceptions of Time Spent on Various Editing Tasks

After Introduction of Pagination by Number and Percentage*

EDITING TASKS	Takes "MORE" Time	Takes "SAME" Time	Takes "LESS" Time
Writing Headlines	13 (9.9%)	51 (39.5%)	65 (50.6%)
Copy Editing Stories	18 (15.5%)	72 (62.1%)	26 (22.4%)
Talk w/reporters Sources About Stories	9 (10%)	67 (74.4%)	14 (15.6%)
Check Facts/Details About Stories	9 (9.1%)	77 (77.8%)	13 (13.1%)
Laying Out Pages	57 (39.3%)	23 (15.9%)	65 (44.8%)
Time in Office	61 (46.2%)	67 (50.8%)	4 (3%)
Planning Upcoming Editions	18 (19.6%)	59 (64.1%)	15 (16.3%)

* Numbers do not necessarily total N = 159 as some individuals indicated they had just joined the staff, that the particular task was not applicable to them, or they simply left a particular response option blank.

Table 8

Statements by Loadings for Type I Person -- LUDDITE WORKER

Statements	Loadings
The pagination system has made me more jumpy and nervous now than before.	.68971
I think there might be more health related problems associated with the electronic editing system now.	.68138
My job is more stressful now than before.	.66709
If we had never installed pagination my health would probably be better today.	.62665
Pagination has resulted in me working more overtime than before.	.60247
I now feel more chained to a desk than I did before pagination.	.59876
I now feel more isolated in my job than I did before.	.54348
Morale is lower now that we have gone to pagination.	.51328
I feel more tension now than I did before pagination.	.49469
Pagination has caused some of the newsroom workers to take early retirement.	.49229
Older reporters/editors have more problems operating the system.	.42136
I now get more feedback from management than I did before.	.40857
Our news flow patterns have changed.	.38730
Management is using the new system to maintain closer checks on the newsroom.	.25632

NOTE: All statements have been changed in direction so that factor loadings can be reported as positive.

Table 9

Statements by Loading for Type II Person -- PRODUCTION WORKER

Statements	Loadings
My job is more interesting now.	.71233
I now feel more responsible for the complete product than before.	.65794
I now can see more of the end result of my work.	.60541
I am now responsible for more of the finished product than before.	.58411
We can more easily handle late-breaking news stories.	.53106
My job is less boring now than before.	.52356
I now am more able to control the pace of my work.	.48267
I have more freedoms to do my job with pagination than before.	.45043
I now am more certain about what I am doing on the job than before.	.44612
I am as productive with the pagination system as I was before.	.41981
The design of our newspaper is better since pagination.	.38467
I think my background, skills, ability and temperment provides a good "fit" with my present job, more so than before pagination.	.38061
Pagination has caused me to need to update my job skills to adequately perform my job.	.36208
We have saved a lot of money because of the pagination system.	.28296
My workload now varies more from day to day.	.23010

NOTE: All statements have been changed in direction so that factor loadings can be reported as positive.

Table 10

Statements by Loadings for Type III Person -- Time Conscious

Statements	Loadings
I have more time to do what is expected of me now than before.	.65132
I now have more periods in the day in which I have little work to do.	.63213
The number of hours I now have to do the job is more reasonable than before.	.54686
I have less to do now than I did before the pagination system.	.53885
My job has not changed since we installed the new pagination system.	.48176
I have more mandated breaks now than I did before pagination.	.47126
I became obsolete the day we installed the pagination system.	.46948
The quality of our editing is better now since pagination.	.38162
We have pushed our deadlines back closer to pressime now.	.35771
Management has more control now over the newsroom and pagination is largely responsible.	.33207
We now work more closely with people in production.	.24221
There are fewer people in management now than there were before pagination.	.22721

NOTE: All statements have been changed in direction so that factor loadings can be reported as positive.

Table 11

Statements by Loadings for Type IV Person -- OPPORTUNISTS

Statements	Loadings
I now am more clear about the amount of authority in my job.	.65192
Pagination has caused the creation of new jobs in the newsroom.	.56765
We have been forced to hire more specialized personnel now.	.53550
I am now more clear about how to go about performing my job opportunities.	.49123
I now have a greater chance for advancement now than before pagination.	.46236
It seems to me that authority and responsibility has spread to more people since pagination.	.45559
Communication now flows more from the top down than before.	.42001
I have more control over others now than before.	.38157
I would like to be promoted to a higher level in this organization.	.20893

NOTE: All statements have been changed in direction so that factor loadings can be reported as positive.

Table 12

Predicting Types of Individuals with Stepwise Regression

Type Person	Factors	R-Square	R-SQ Ch	F-Factor
Luddite Person	Position	.04754	.04754	4.592
	Years in Position	.08181	.03427	3.397
	Degree Field	.09997	.01816	1.815
	Formal Paga Trng	.12339	.02342	2.378
	Sex	.15373	.03034	3.156
	# Paga Terminals	.17945	.02572	2.726
	Share Terminal	.19132	.01187	1.262
	Education	.19757	.00625	.662
	Planning Involve	.19987	.00230	.242
	How Paga Decs Made	.20023	.00036	.037
Production Person	Planning Inv'ment	.14297	.14297	15.347
	Sex	.17194	.02897	3.184
	How Paga Decs Made	.19043	.01849	2.056
	# Hours Use Paga	.20720	.01677	1.883
	Age	.21698	.00978	1.099
	Formal Paga Trng	.22732	.01034	1.164
	Circulation	.23334	.00602	.675
	Education	.23729	.00395	.441
	Position	.24125	.00396	.438
	Share Terminal	.24350	.00225	.247
	# Terminals Nwsrm	.24567	.00217	.236
	Degree Field	.24620	.00053	.057
Time Consc Person	Planning Inv'ment	.16300	.16300	17.916
	# Paga in Nwsrm	.19993	.03693	4.200
	Sex	.21325	.01332	1.524
	Share Terminal	.22311	.00986	1.130
	Position	.23560	.01249	1.438
	Circulation	.24214	.00654	.751
	How Paga Decs Made	.24873	.00659	.755
	Age	.25127	.00254	.288
	Yrs in News Field	.25449	.00322	.363
	# Hrs Use Paga Day	.25655	.00206	.229
	Formal Paga Trng	.25763	.00108	.120
	Education	.25896	.00133	.145
	Degree Field	.25946	.00050	.045
Opportunist	How Paga Decs Made	.12522	.12522	20.390
	Age	.15971	.03449	4.736
	# Hrs Day Use Term	.16748	.00777	3.317
	Position	.17060	.00312	1.208
	Degree Field	.17159	.00099	.590
	Formal Paga Trng	.17276	.00117	.324
	# Terminals/Newsrm	.17336	.00060	.187
	Circulation	.17382	.00046	.273
	Education	.17416	.00034	.214
	Share Terminal	.17428	.00012	.029
	Sex	.17439	.00011	.017
	Yrs News Field	.17455	.00016	.018

Table 13

Number and Percentage for Problems Mentioned by Respondents

# Times Mentioned	Percent Responding*	Problems
26	20.2%	Flaws with particular system
24	18.6%	Computer crashes regularly
16	12.4%	Hardware/software inadequacies
7	5.4%	Slow response time/limited storage capab.
6	4.7%	System won't do all promised
13	10%	Eye Problems
6	4.7%	Job stress
9	7%	Inadequate manuals
7	5.4%	Inadequate training program
5	3.9%	Turns us into printers, not editors

NOTE: Percent is of those listing at least one problem with pagination.

Table 14

Advice Given by Respondents by Number and Percentage

# Times Mentioned	Percent Responding*	Problem
36	27.9%	Develop a training program
15	11.6%	Given them time to practice in non-deadline environment
8	6.2%	Involve employees in training
6	4.7%	Teach editors printing basics
16	12.4%	Add to news staff
17	13.2%	Put 1 person in charge of system to deal with problems and manage
14	10.9%	Talk with others who have system, users,etc., before deciding on particular system
8	6.2%	Don't force people to use pagination
7	5.4%	Considering hiring specialists to use pagination
7	5.4%	Look carefully at sophistication of system
6	4.7%	Redo manuals so they are user friendly
8	6.2%	Design new desk system as slot works differently now
7	5.4%	Devise schedule for use of terminals
11	8.5%	GO FOR IT!!! IMPLEMENT PAGINATION!!

NOTE: Percentage is of those individuals making at least one suggestion.